



The chart is oriented for
 Dec. 1 at 1 a.m. NZDT
 Dec. 15 at midnight "
 Jan. 1 at 11 p.m. "
 Jan. 15 at 10 p.m. "

Evening sky in January 2012

To use the chart, hold it up to the sky. Turn the chart so the direction you are looking is at the bottom of the chart. If you are looking to the south then have 'South horizon' at the lower edge. As the earth turns the sky appears to rotate clockwise around the south celestial pole (SCP on the chart). Stars rise in the east and set in the west, just like the sun. The sky makes a small extra clockwise or westward rotation from night to night as we orbit the sun.

Venus and Jupiter are the 'evening stars', appearing soon after sunset. Venus, brilliant and silver, is in the west; golden Jupiter in the northwest. Sirius, the brightest true star, is high in the east at dusk. Left of it is Orion, containing 'The Pot', with Taurus and the Pleiades/Matariki star cluster further left toward the north. Canopus, the second brightest star after Sirius, is southeast of the zenith. Crux, the Southern Cross, and the Pointers are low in the south.

The Evening Sky in January 2012

Venus and **Jupiter** are the 'evening stars', appearing soon after sunset. Brilliant silver Venus is low in the west. It sets in the southwest two hours after the sun. In a telescope it looks like a gibbous moon. Venus is on the far side of the sun from us, 180 million km away, slowly catching us up.

Jupiter is in the northwest at dusk, shining with a steady golden light. It sets around 1 a.m. Its four big moons are easily seen in a telescope looking like stars lined up on either side of the planet. It is 720 million km away as we move to the far side of the sun from it.

Sirius, the brightest true star, appears high in the east at dusk. Called 'the Dog Star' it marks the head of **Canis Major** the big dog. A group of stars to the right of it make the dog's hindquarters and tail, upside down just now. Sirius is the brightest star in the sky both because it is relatively close, nine light years* away, and 23 times brighter than the sun. **Procyon**, in the northeast below Sirius, marks the smaller of the two dogs that follow Orion.

Left of Sirius as the sky darkens are **Rigel** and **Betelgeuse** the brightest stars in **Orion** the hunter. Between them, but fainter, is a line of three stars making Orion's belt. **Rigel** is a bluish supergiant star, 70 000 times brighter than the sun and much hotter. It is 800 light years away. Orange **Betelgeuse**, below Orion's belt, is a red-giant star, cooler than the sun but hundreds of times bigger: a ball of extremely thin hot gas. To southern hemisphere star watchers, Orion's belt makes the bottom of 'The Pot' or 'The Saucepan'. A faint line of stars above and right of the belt is the pot's handle or Orion's sword. It has a glowing cloud at its centre: the Orion Nebula.

Left of Orion is the V-shaped pattern of stars making the face of **Taurus** the Bull. The V-shaped group is called the Hyades cluster. It is 150 light years away. Orange **Aldebaran**, Arabic for 'the eye of the bull', is not a member of the cluster but on the line of sight, half the cluster's distance.

Left again, toward the north and lower, is the **Pleiades/Matariki/Seven Sisters/ Subaru** star cluster. Pretty to the eye and impressive in binoculars, it is 400 light years from us. The cluster is around 70 million years old. From northern NZ the bright star **Capella** is on the north skyline.

Low in the south are **Crux**, the Southern Cross, and Beta and **Alpha Centauri**, often called 'The Pointers'. Alpha Centauri is the closest naked-eye star, 4.3 light years away. A telescope shows it is a binary star: two stars orbiting each other in 80 years. Beta Centauri, like most of the stars in Crux, is a blue-giant star hundreds of light years away. **Canopus** is also very luminous and distant: 13 000 times brighter than the sun and 300 light years away.

The **Milky Way** is in the eastern sky, brightest in the southeast toward Crux. It can be traced towards the north but becomes faint below Orion. The Milky Way is our edgewise view of the galaxy, the pancake of billions of stars of which the sun is just one. Binoculars show many star clusters and a few glowing gas clouds in the Milky Way, particularly in the Carina region.

The Clouds of Magellan, **LMC** and **SMC** are high in the southern sky and easily seen by eye on a dark moonless night. They are two small galaxies about 160 000 and 200 000 light years away.

Mars, not shown, rises due east around 12:30 a.m. at the beginning of the month. It looks like a bright orange-red star. By the end of the month it will be up around 10:30. It is brightening as we catch up on it. At mid month it will be 140 million km away so appears small in a telescope.

Saturn, not shown, rises due east about 2 a.m. at the beginning of the month. By the end of January it will be up at midnight. It makes a pair with Spica, the brightest star in Virgo, above and left of Saturn. It is 1460 million km from us mid month.

*A **light year** is the distance that light travels in one year: nearly 10 million million km or 10^{13} km. Sunlight takes eight minutes to get here; moonlight about one second. Sunlight reaches Neptune, the outermost major planet, in four hours. It takes four years to reach the nearest star, Alpha Centauri.